

**We claim:**

1. A method of avoiding corrosion in the separation of methylamines from a product stream (10) which is obtained in the preparation of methylamines by gas-phase reaction of methanol and ammonia and comprises monomethylamine, dimethylamine, trimethylamine, ammonia and methanol as components, where ammonia (11) is separated off by pure distillation in a first column (1), the remaining components of the product stream obtained as bottoms (12) are fed to a second column (2), trimethylamine (14) is separated off in the second column (2) by extractive distillation with introduction of water, the further components of the product stream obtained as bottoms (15) from the second column (2) are fed to a third column (3), monomethylamine and dimethylamine are separated off in the third column (3) and the monomethylamine and dimethylamine are separated by distillation in a fourth column (4), wherein alkali metal hydroxide is added to the second or third column (3).  
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2. A method as claimed in claim 1, wherein an additional fifth column (5) into which a stream taken from a side offtake or the bottom of the third column (3) is fed and in which methanol is separated off by distillation is installed downstream of the third column (3).  
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3. A method as claimed in claim 2, wherein the methanol-free water obtained as bottoms from the fifth column (5) is recirculated to the third column (3).  
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4. A method as claimed in any of claims 1 to 3, wherein the alkali metal hydroxide is added to the feed (17) to the third column (3).  
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5. A method as claimed in any of claims 1 to 3, wherein the alkali metal hydroxide is added to the bottom (15) from the second column (2) or is introduced into the stripping section of the second column (2).  
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6. A method as claimed in any of claims 1 to 5, wherein the amount of alkali metal hydroxide added is such that alkali metal hydroxide is still present in the bottoms from the third column (3).  
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7. A method as claimed in any of claims 1 to 6, wherein the alkali metal hydroxide is sodium hydroxide.
- 5 8. A method as claimed in any of claims 1 to 6, wherein the alkali metal hydroxide is potassium hydroxide.